

Electrochemical Aptasensor Based on a Macrocyclic Ligand Bearing Neutral Red

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Abstract

An amperometric aptasensor has been developed by immobilization of DNA aptamer with Neutral Red (NR) on polycarboxylated thiacalix[4]arene onto the electropolymerized NR layer at a glassy carbon electrode. The NR reduction current recorded after 10min incubation decayed with increased thrombin concentration due to limitation of the electron exchange in the surface layer. The aptasensor makes it possible to determine 0.1-50nM of thrombin (limit of detection 0.05nM). The aptasensor can be used for the direct determination of thrombin in blood serum and does not exert any alteration of the response in the presence of 100 fold excess of serum proteins. © 2012 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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Keywords

Aptasensor, DNA Aptamer, Neutral Red, Thiacalixarene, Thrombin